

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2213.—VOL. XLVIII.

LONDON, SATURDAY, JANUARY 19, 1878.

PRICE (WITH THE JOURNAL) SIXPENCE.
PER ANNUM, BY POST, £1 4s.

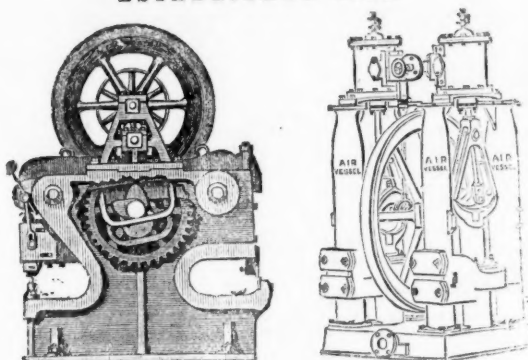
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PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10,
28'30, 27'10, 28'40, 28'70 metres. Total advance of south head-
ing during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere (7½ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these
Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL
USE THROUGHOUT THE WORLD FOR MINING, TUN-
NELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the
most portable—the most durable—the most compact—of the
best mechanical device. They contain the fewest parts—have
no weak parts—act without SHOCK upon any of the operat-
ing parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or
open work. Their working parts are best protected against
grit and accidents. The various methods of mounting them
are the most efficient.

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character of work in hand in writing us for information,
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- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
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- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
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They have been supplied to some of the principal mines in the United Kingdom
and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines,
Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esqair-
mwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,
Darlington; also Mr. Sewell, for Argenteiferous Copper Mines, Peru; the Brats-
berg Copper Mines, Norway, and Mines in Italy, Germany, United States of
America, and Australia, from all of whom certificates of the complete efficiency of
the system can be had.

WASTE HEAPS, consisting of refuse chate and skimpings of a
former washing, containing a mixture of lead, blende, and sulphur
DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The year's
profit on our Nanthead waste heaps amounted last year to £800, besides the ma-
chinery being occupied for some months in dressing ore-stuff from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much
pleasure in stating that a full and superior set of your Ore Dressing Machinery has
been at work at these mines for fully a month, and each day as the moving parts
become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
says—"Your machinery saves fully one-half on old wages, and vastly more on the
wages we have now to pay. Over and above the saving in cost is the saving in ore,
which is not much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The
separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close
the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose
and will do for any kind of metallic ores—the very thing so long needed for dress-
ing-floors."

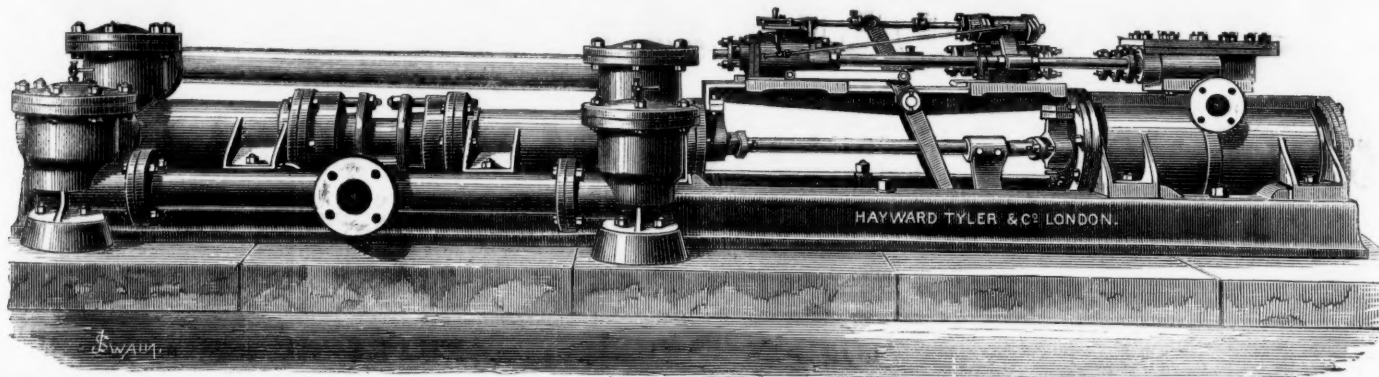
Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E. ABERYSTWTH SOUTH WALES



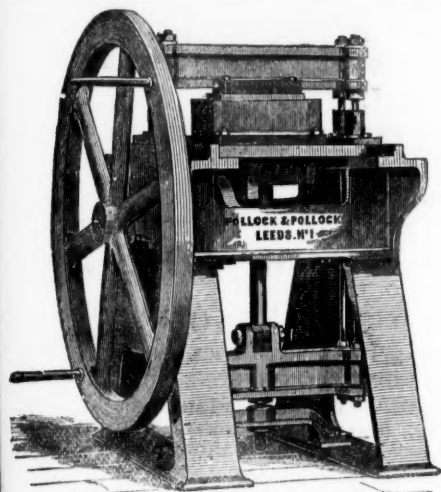
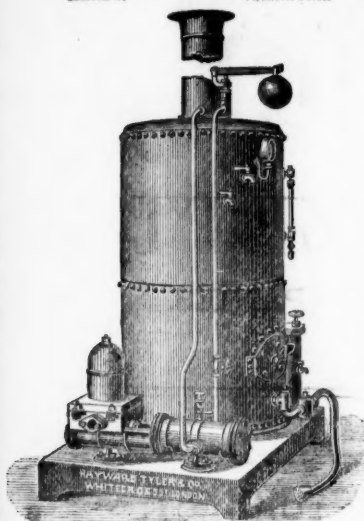
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The following extracts from the reports of Judges in awarding Medals:—
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"4.—The steam or cushions at each end of cylinder effectually protect from injury
"5. Its having an automatic feed, giving it a steady motion, &c.
"6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.
"7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."
Medals awarded for several years in succession "For the reason that we adjudge it so important in its use and complete in its construction as to supplant every article previously used for accomplishing the same purpose."
Estimates given for Air Compressors and all kinds of Mining Machinery. Send for Illustrated Catalogues, Price Lists, Testimonials, &c., as above.

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For Tunnels, Mines, Quarries, Harbour Works, Cutting Blocks of Granite, &c.

The working parts are made of the toughest steel and phosphor-bronze—steel castings are also used—so as to combine strength with light weight.



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CAST STEEL FOR TOOLS. CHISEL SHEAR, BLISTER, & SPRING STEEL.

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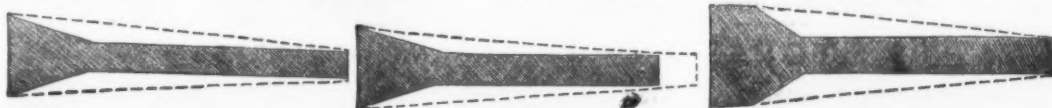
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JOEL EATON WALKER, STEEL MERCHANT, SHEFFIELD

NOTICE.—These Sections are Registered.

Original Correspondence.

ROCK-BORING MACHINERY.

SIR.—In the present unsatisfactory condition of the metal markets, inventions calculated to minimise manual labour and accelerate mining operations are an absolute necessity, if the prestige of England as an industrial nation is to be maintained. With a view of accomplishing this the ingenuity of our best mining engineers has been taxed for more than a generation, and from time to time mechanical appliances of various descriptions have been introduced. As might be expected, these are more or less imperfect, not perhaps through ignorance of mechanical principles, but a lack of acquaintance with the conditions under which such inventions could be successfully applied. The progress made in one direction—that of rock-boring machinery—will be evident by a perusal of the following facts.

Sometime ago the proprietors of the above mine decided upon making a trial of the lodes at a 60 fm. level, or 25 fms. below the 36—the deepest level—and, in order to accomplish the work both quickly and cheaply they resolved—(1), that the shaft should be sunk round, 10½ ft. diameter; (2), the depth of 25 fms., made without break or stoppage; (3), compressing apparatus, erected with other necessary rock-boring tackle; (4), to employ two Darlington boring machines at the bottom of the shaft, and to continue the applications of these machines in driving the bottom levels.

In order to carry the work into effect Mr. Darlington was freely consulted, and, with his assistance in designing and arranging the apparatus, the shaft has been sunk to the requisite depth—this work having been accomplished under my superintendence, with men thoroughly untrained, and who, in fact, never saw a rock-boring machine until the Darlington borers were introduced. As I am of opinion that the results we have obtained, even under the adverse circumstances of employing raw and unskilled hands, are as favourable as any of those hitherto published, it will, no doubt, be interesting to many of your readers to notice them.

NATURE OF GROUND.—The rock through which the shaft is sunk consists of a tough clay-slate, more or less broken and jointed from its near contiguity to the hanging-wall of a large vein. In addition, this clay-slate during the sink was frequently intercalated with quartz, both loose and compact, and occasionally open joints, rendering in such cases the path of the boring tools somewhat difficult.

COMPRESSOR.—The compressor designed by Mr. Darlington is formed of three vertical cylinders. The cylinders are each single acting, and enclosed within a tank of water. The diameter of each cylinder is 14 in.; length of stroke, 18 in. At a speed of 25 revolutions per minute sufficient air is compressed to a pressure of 50 lbs. per inch to run together two Darlington machines. In addition to the water surrounding the cylinders water is also introduced to the interior of the cylinders, which keeps them comparatively cold. The pistons are solid, the inlet valves open for inspection, and, if necessary, can be instantly renewed. By having the cylinders single acting their dimensions are greater than those of double acting; but against this is to be set the advantage of dispensing with side guides, cylinder covers, and stuffing-boxes, while the piston is always kept cool by outside air, and open to constant inspection.

RECEIVER.—The receiver consists of an old egg-ended boiler, 24 ft. 6 in. long, and 3 ft. diameter; cubic contents, 170 feet. The fittings comprise a blow-off cock, stop and safety valves.

AIR-PIPES.—The air-pipes are of cast-iron, 9 ft. in length, and 3 in. diameter. The flanges are faced and "scored," and rendered tight when screwed together by thin rings of indiarubber.

SHAFT SINKING STANDS.—In this apparatus Mr. Darlington has departed from all other engagements for a like purpose. The stand is the pumping lift itself, the boring arms rotating around the wind-bore, which is made of cannon-like strength. At the top of the wind-bore is a wrought-iron pent-house or platform, encircling the pump, affording perfect protection to the men. It is 9½ ft. diameter, and is provided with doors closing the kibbles and manhole ways. The lift was built up for a length of 12 fms. previously to commencing the sinking operations, proper provision having been made for discharging the water at intervals of 18 ft., and lowering the lift by long screws as the shaft was deepened. This arrangement has in every way answered its intended purpose, and its great advantage over the old form of sinking stand, both in steadiness and facility for shifting the boring machine, is remarked by all who have seen it.

DARLINGTON BORING MACHINES.—The boring machines are single acting, equal to a cylinder 2½ in. diameter; speed under a pressure of 50 lbs. of air, say 500 strokes per minute. During a period of seven weeks we only had two machines on the ground, and, though they were constantly in use, all that time they required no repairing, and caused no hindrance or delay whatever.

WORKMEN.—The men employed in the shaft were taken from the tribute pitches and stopes, and were totally ignorant of any mechanical method of working ground.

DRAWING POWER.—The old drawing machine was used—a new one intended for the purpose not being erected till the sink was nearly completed. The power of this machine was altogether inadequate to meet our requirements; indeed, with an engine proportioned to our work we should have made four sinks per week, instead of three—the average number—which would have given us an additional 3 ft. of ground per week. This will be apparent when I say that 70 per cent. of the total time worked was occupied in removing stuff.

HOLES.—In commencing this work the average depth of our holes was 40 in.; latterly they were drilled from 50 to 60 in. deep. Throughout a series of 22 sinks, the average depth of the holes was 52 in. per sink. The average length of the boring shift was 6½ hours.

BLASTING.—The holes were fired by electricity, Brain's electric high tension fuses having been used.

SINKS.—A sink comprised three distinct operations—(a), boring the holes; (b), charging and blasting same; (c), removing stuff. During the last eight weeks' working 22 sinks were made, which removed a lineal depth of 13 fms. 5 ft. of ground; the number of holes per sink was 21.

STATISTICS.—The following are the general statistics in connection with the depth referred to—13 fms. 5 ft.

(a) Boring holes—including
hindrances ... 184 hours, or 20 p. c. total time.
Charging and blasting ... 94 " 10 "
Removing stuff ... 666½ " 70 "

Total ... 949½ " 100

(b) Charging and Blasting—Dynamite consumed ... 329 lbs.
No. of electric fuses used ... 466

(c) Removing Stuff—No. of kibbles drawn ... 3019
Estimated weight of stuff ... 704 tons.

HINDRANCES.—The total number of hours worked was 810; the total number of hours hindered, 134½, or 14 per cent. of the whole time. The principal hindrances occurred with the drawing machinery, and through over haste in some of the blasting operations.

ECONOMIC RESULTS.—The direct money result is as follows:—
Hand price—9 men, for 25 fms. of ground, at
31l. 10s. (old price) ... £787 10 0

Price with 2 Darlington machines, and
9 men, 13l. per fathom ... £325 0 0

48 tons of coal, at 14s. 6d. ... 34 16 0

Oil and sundries ... 10 0 0

Repair of machines ... nil. = £369 16 0

Amount gained by using boring machines ... £417 17 0

Or 16l. 14s. 2d. per fathom.

In the item of time the result may fairly be reckoned as follows:—
Hand Labour—Average speed of last sink, 2 ft. per
week, or for 25 fms. ... 78 weeks.

Machine Speed—Average of the last 8 weeks, 10 ft.
5 in. per week ... 14½ "

Gain in time ... 63½ weeks.

RATE OF SPEED.—Number of men, same in each case—Hand
labour, 1; machine speed, 5½.

If the dead charges could be apportioned in the period on 63½ weeks

saved by the machine work it would show the results obtained by the use of rock-boring machinery in a much more striking manner. To maintain the pumping engine alone it would cost 9l. 10s. per week, which for 63½ weeks would amount to 602l. 15s., which would increase the actual cost of the shaft by hand from 787l. 10s. to 1390l. 5s.—making a difference of 1020l. 9s. in favour of the application of boring machinery. It should also be added that for the contract price, 13l. 10s. per fathom, the contractors had to put in dividings and sheathing, ladders and sallows, air-pipes, pumps, bucket-rods, and all accessories, upon which no inconsiderable amount of time was spent. When the hindrances were not material we sunk 2 fms. per week; but with proper drawing-power and a shorter pumping-lift (it is 23 fms. now) I would undertake to sink 2½ fms. weekly.

Of the Darlington machines it may be said that they are always ready to do their work, and are always reliable. We have used them with men trained by ourselves without a fitting-shop or engineer on the mine, and, though they have had rough handling, the machines are in as good trim to-day as the first time they worked. This to any unprejudiced mind is a strong point in their favour, and what cannot be said of but few, if any, machines in the market. We shall commence to drive with these machines almost immediately, and as we improve in our organisation of the work itself we cannot fail to obtain still more advantageous results. JOHN BARKELL.

Rushen Mine, Colby, Isle of Man, Jan. 12.

INGERSOLL ROCK DRILL.

SIR.—I have read with great interest the correspondence that has appeared in the Journal on Rock Drilling Machinery, and take this opportunity of sending you the following facts:—

Two Ingersoll drills, 2½ in. cylinder, 4 in. stroke, are working in a heading, 7 ft. by 7 ft., in tight hard limestone rock. The drills are driven by compressed air at a pressure of 55 lbs. per square inch. Four men are employed in the face each 12-hour shift, two at each drill, and two loading the debris. The cost of the heading (without interest on capital and depreciation of machinery) was 5l. 9s. 5d. per lineal yard, and the speed averaged 24 ft. per week. Previous to the drills being put in the heading the work was carried on by hand-labour, the same number of men being employed each shift; the cost then was 7l. 4s. 11d. per lineal yard, and the speed averaged 10 ft. per week. The drills are now employed in taking out the tunnel to the full size, 26 ft. by 23 ft.

A short time ago a competition took place in a hard limestone quarry here between a patent hand-boring machine and three miners from the tunnel. In ten minutes the machines drilled 6 in., and in the same time the men drilled 19½ in. At their ordinary work underground in the same rock the men seldom drill more than 18 in. per hour.—Dowlais, Jan. 12. JOHN C. MACKAY, Stud. Inst. C.E.

DIAMOND FUEL COMPANY (LIMITED).

SIR.—As a shareholder in the above company I am constantly favoured with circulars from the secretary and from certain shareholders, the first wanting my support to "sell the whole concern and amicably wind-up," the latter wanting the same assistance for a Chancery suit to "make the directors and promoters disgorge large sums appropriated by them;" "to prevent the directors selling the only remaining assets to their own nominee for about 3000l. for what has cost the shareholders 38,000l., or a total of 140,000l.;" "to prevent the greater portion of the purchase money (3000l.) being paid to the directors for fees, and with the hopes of recovering about 30,000l. for the benefit of the shareholders." Now, Sir, I find this rather puzzling, and would be glad if any of your correspondents could inform me of the names of the present directors, as I should like to judge for myself how far it is possible from their antecedents, that such heavy charges can be made against them as the foregoing evidently discloses; if they have nothing to hide why object so pleadingly to a public winding-up? but otherwise I can very well understand their motive, and in such case it is the duty of the shareholders that the petition to the Court of Chancery be supported, when possibly we may learn with what wisdom or otherwise, and in what manner, the "first issue of 125,000l., in 25,000 shares of 5l. each, of which 16,800 shares are offered to the public," has been expended, and will now only realise some 3000l. after many years floating, and not one single dividend being paid. I note that 15,000l. cash and 8200 fully-paid shares, equalling 56,000l., were paid for this patent, and without wishing to be harsh I hope you will lend the assistance of your valuable journal to unravel this mysterious concern. A VICTIM OF MISPLACED CONFIDENCE.

CAPE COPPER COMPANY.

SIR.—Being no speculator, but a poor countryman of limited means, I should be most grateful if, through your valuable Journal, some correspondent could give information as to the above mining company, which would be most important to one who has no means of hearing, and who depends for income on its dividends. I wish to know why it is that now the reserve in the Cape Copper Mine, by its own showing, is being mainly drawn on for the output, and only three drivings are producing any copper, that the shares are quoted at 31 to 32. In 1874, when the reserve was 36,000 tons, there were six or eight levels producing copper. The shares then were at 27, and the dividend was 4l. annually per share; now the dividend is only 3l. 12s. 6d., and may be much less; and if the 36,000 tons be exhausted, which seems likely in two years more, where is our capital and interest gone? COPPER-HEAD.

THE EMMA MINE.

SIR.—The lessee of the upper works of the Emma Mine has been at work for the last two months with a few men only, and the principal work performed during that time has been in timbering and following up the leaders and feeders of ore. No one could expect any great amount of ore in doing that kind of business, still the result obtained was very satisfactory to him. He expended, from Oct. 29 to Dec. 29, \$5000, and he obtained 93 tons of ore, of an average value on assay of 184 ozs. in silver, and 45 per cent. in lead—the ore being worth, in round numbers, \$20,000. For your own satisfaction I give you here the amount as taken by myself from the books:—Total, 92 tons (1715 lbs.) ore assaying from—

36-45 ozs. of silver	...	35	per cent. lead.
61-24 "	...	39	"
72-92 "	...	42½	"
138-54 "	...	51	"
69-99 "	...	46½	"
58-17 "	...	48	"
355-08 "	...	47	"
114-46 "	...	48½	"
545-40 "	...	45	"
48-26 "	...	27	"
427-25 "	...	54½	"
278-95 "	...	56	"

The work during the winter will consist in repairing, re-timbering, and prospecting. Soon as spring commences the mine will be worked with vigour, and the dumps of the same will be worked over by concentration and leaching. W. BREDEMAYER, M.E.
Salt Lake City, Dec. 29.

RICHMOND CONSOLIDATED MINING COMPANY.

SIR.—I observe a letter in last week's Journal from one who signs himself "A Needy Shareholder," suggesting that the directors should pay a larger dividend than 7s. 6d. per share. I hope the directors will do nothing of the kind. Now is the time to lay the foundation of a substantial reserve fund to provide against any future contingencies, and I trust the directors will not swerve from the policy enunciated by the Chairman at the last meeting, as it is beyond all question the only sound and wise policy, having regard to the future interests of the company. I think it desirable to press this upon the minds of the directors, as there appeared a slight symptom of vacillation on the part of the Chairman towards the close of the meeting in replying to a remark made upon the same subject by Mr. Bridgewater. Let a reserve fund of 50,000l. be created and actually invested, besides providing for the outstanding debentures, and if

the "Needy Shareholder" does not get an increased dividend at present he will surely see his shares stand at an increased value, and, therefore, to him and to other I recommend a little.—
Jan. 14. FORTHRIGHT.

RICHMOND MINING COMPANY.

SIR.—In reply to the letter of "Needy Shareholder," I desire to state that at the last meeting of the Richmond Consolidated Mining Company, held on Dec. 20, a large shareholder, well acquainted with the capabilities of the mine, proposed that the next quarterly dividend should be nothing less than 12s. 6d. per share instead of 7s. 6d. per share, "because the late discoveries fully enabled the directors to do so," if not higher dividends, judged of by weekly returns of \$80,000, now increased to \$100,000. Indeed, all the shareholders should firmly advocate 15s. per share for the next quarterly dividend. It is all nonsense to say such returns to pay only 7s. 6d. per share (28 per cent. per annum), and when all the law expenses have been paid, which the directors declared in the prospectus as well as at the last December meeting. Besides, shareholders were kept for just ten months without dividends to pay the late law proceedings previous to the last quarterly dividend. INVESTOR.

RICHMOND MINE.

SIR.—Seeing such splendid returns from the above mine, and that full prosperity has now dawned upon the company, I quite agree with a "Needy Shareholder" that we ought to receive larger dividends, taking into account the patience they bore when no dividends were paid. If the directors with five furnaces could pay 7s. 6d. per share quarterly, surely with three furnaces and the returns almost double they can very well increase the dividend. It is a simple rule-of-three sum. In order to prevent a feeling of general dissatisfaction I hope they will allow the shareholders to participate in the prosperity of the company. AN OLD SHAREHOLDER.
Jan. 16.

FLAGSTAFF MINE.

SIR.—I enclose you a cutting from the Salt Lake Daily Tribune of Dec. 12, containing an account of law proceedings against this company, showing that an execution was levied upon the company's goods and property, under a judgment obtained after trial in open Court, and that the Sheriff's return was that he could "find no property, real or personal, belonging to the said company whereon to levy the said execution or satisfy the same." If this statement is true it would show both shares and debentures in the company to be utterly valueless; still the price of the shares last week, and the amount of debts together, would lead anyone to suppose that the mine was worth a very large sum—say, 70,000l.—even though two months ago there were only two months' reserves of ore left. Can any person explain this anomalous condition of affairs? PERPLEXED.

FLAGSTAFF MINING COMPANY.

SIR.—I have read with much interest and attention the several letters from your numerous correspondents in reference to the unfortunate position in which the company is now placed—a position rendered more perilous by the dissensions which have for some weeks past existed between the members forming the board of directors. I have lately made myself thoroughly conversant with the matters in dispute, and I think that I but echo the opinions of the majority of the better disposed body of share and debenture-holders when I state that we are greatly indebted to the excellent and sound judgment of the Chairman, Mr. Harvey (whose acquaintance I made about six months ago, and whom I have since found to be a strictly honourable and just man) in releasing the company from the grasp of Erwin Davis, and which, but for his timely act and determined spirit, would still be under the control of the said Davis. And yet in spite of all this he seems to be in the present controversy subject to trouble and annoyance. In his desire to assist the company and relieve it from the possession of Davis, Patrick, and Co., he had the advice and assistance of Mr. Pearson, in whom he found a colleague who was both willing and able to assist the company most materially in time and money, and from what I have lately ascertained I feel confident that had it not been for the energetic and prudent measures adopted by these two gentlemen the company would long since have again lapsed into the power and control of Erwin Davis. I have also ascertained that Mr. Vincent has materially assisted the company, by his knowledge of the property, and his reports upon it have, I doubt not, been duly appreciated. But the recent events in Utah, which have lately been of so disastrous a character, have occurred from no fault of any of the gentlemen I have named.

The arrangements made by Messrs. Harvey, Pearson, and Vincent in America last July and August (or, rather, more correctly speaking those made by Mr. Pearson on behalf of the company) were of a most satisfactory nature. Mr. Billing, whom I have met in Utah and New York, is a very respectable and responsible man, and whom I thought fully competent to carry out whatever arrangements he felt disposed to make. The mine was reputed to be in a highly flourishing position, capable of producing from 50 to 60 tons of good ore per diem, and Billing, no doubt, thought himself justified in agreeing to assume the responsibility of providing for the company's debts, and he accordingly entered into certain contracts with Mr. Pearson by which he agreed to remit \$5000 per annum in quarterly instalments for London offices expenses, and \$12,000 in half yearly payments, to meet the interest on debentures due Jan. 1 and July 1 in each year. The only security he held was the lease which Hunter had surrendered to him, and by which he was to have 25 per cent. of the profits of the mine, rather a poor security for an advance of perhaps \$180,000 or \$200,000. I do not think long since that Billing has been fairly treated. The produce of the mine has already fallen considerably below the anticipated expectations, the ore until very lately has been poor, the markets are bad, and Billing has had already to expend large sums of money in extending the tramway, paying off debts, and timbering the mine, a sum altogether between, as I am informed, \$80,000 to \$100,000. No man can reasonably be expected to ruin himself in order that others may reap large advantages.

The position of matters in Salt Lake City during the last twelve months appears to have been thus:—In November, 1876, Mr. Hunter was selected by the board of directors in London to proceed to Salt Lake, and, in conjunction with Judge McBride, endeavour to obtain possession of the mine, and the other property of the company from Mr. Patrick, Mr. Davis's nominee. I am informed that he (Hunter) was furnished with power of attorney, a lease of the mine held in trust for the company, a revocation and cancellation of the power of attorney, and appointment of Patrick as attorney-in-fact and manager, a smelting contract, and a power authorising him to place a mortgage upon the property of the company for \$484,000 gold coin, repayable in ten years; to secure said amount to be raised on debentures in England. Well, by the assistance of the power of attorney he, with the co-operation and assistance of Judge McBride, succeeded in obtaining possession of the mine, and the lease gave him the right to claim all the ore on the dump, and any which might be taken from the mine. The lease was for ten years, determinable at the end of three years, on his being paid so much per cent. on the three years profits. I believe that the smelting contract was never acted upon, and that nothing was ever paid to Hunter under it. Hunter continued to act as attorney-in-fact, manager, and lessee of the company's property until July last, when, in consequence of various rumours that he was not acting in the best interests of the company, and that, in fact, he had been speculating with the moneys belonging to the company, it was resolved to remove him from his appointments. In June last Messrs. Harvey, Pearson, and Vincent went to America for the purpose (the latter more particularly to examine and report upon the then present and the future prospects of the mine, a task he is so well qualified to perform, and did examine the mine, and made his report, which must be considered very gratifying, although he has somewhat overrated the capabilities of the producing powers of the mine.) The consequence of their journey was that Hunter was removed, and, as I have before remarked, his lease was assigned to F. Billing, with certain modifications by which the company benefited most materially, one modification being reducing the term from ten to three years.

I have heard so many remarks made in both England and America as regards the antecedents of A. G. Hunter, that I must here digress, and remark that Hunter was strongly recommended to the London board as a man who had the ability and energy to cope with extreme difficulties, and therefore the best man to be entrusted with such an important mission as to take possession of the company's property, and although other men might have been found who were equally as well qualified to undertake such a venture, still his references being good and substantial, and the chairman acting upon such references, entrusted him with the mission. I understand that Messrs. Pearson and Vincent were also in favour of Hunter. He worked well for the company for some four months or so, at the end of that period the atmosphere of Salt Lake evidently disagreeing with his constitution, he launched out into such extravagances which would soon have played the company in a worse state than it was when he took possession, and this fact becoming known to the London board it was decided that it would be in the interests of the company to remove him, and hence the journey to Messrs. Harvey, Pearson, and Vincent, and its results. The lease was, therefore, in July last assigned to Billing on the understanding as already detailed in the former part of this letter. One of the items of indebtedness Mr. Billing has assumed was the payment of the judgment obtained by the Omaha Company in February last for a sum of \$44,000 odd—a debt which had been contracted by J. N. H. Patrick, the former manager. This debt was compromised. An arrangement was made whereby the company should pay it by eight regular monthly instalments. This arrangement was made by Hunter during the time he acted as manager and lessee. Most of these instalments were paid by Billing; in fact all but the last, amounting to \$4953, and this Billing failed to pay. The consequence was that Mr. McCormick, the nominee of the Omaha Company, took a deed of sale of the mine, and foreclosed the mine, therefore, passing out of the hands of the company to him.

From what I can learn further about this matter it would appear that this deed of sale is beyond redemption. If this could be set aside there are only, I think, two judgments which rank prior to the mortgage deed, amounting to about \$12,000. I believe it is a fact that McCormick has a further lien upon the mine of some \$28,000 money advanced for the purpose of the company. His lien altogether, therefore, is about \$28,000. It has been remarked by persons connected with me in Salt Lake City that even if the lease to Hunter was informal, any informality that then existed was set right on its being assigned to Billing, and that the amount advanced by Billing was in strict accordance with his contract, and that

the lease can now only be cancelled upon payment to him of the sum he has so advanced, together with a reasonable amount of interest, and from what I know of Billing he would only be too happy to be relieved of his responsibility. There can be no doubt but that the mine and property of the company is very deeply in debt, which, with even the present prospects of the yield of the mine will take at least two years to pay off, besides which there are numerous law and litigation suits still going on in Utah which must plunge the company in irretrievable ruin. In the face of all these facts how is the company going to be managed when there are dissensions existing on the board in London? Whichever parties win the run is the same. I had an interview with the secretary (Mr. A. A. Demetz) lately, but he seemed very reticent in mixing himself up with the broils of the various parties. He is a man whom I greatly respect both for his ability and integrity, and I think he is thoroughly able to cope with the present difficulties, and if he had been in Utah instead of in London, I feel confident matters would have been very different. Mr. Vincent stated at a meeting of debenture holders, Dec. 7, that the secretary knew more about the affairs of the company than all the directors put together. I think that was a very injudicious observation, but I do not doubt but that it is nevertheless the truth. I have always taken a great interest in the company, and I hope that some definite plan will be adopted whereby its affairs will shortly assume a more favourable aspect. Apologising for the length of my letter.

London and Salt Lake, Jan. 8.

FLAGSTAFF SILVER MINING COMPANY.

SIR,—A notice having appeared in the daily papers informing "all it may concern" that Messrs. Pearson and Harvey had resigned their seats at the board, I was sufficiently curious to enquire at the office the cause of what appeared to me desertion of the company in her terrible distress. The replies elicited confirmed my previous opinion of these gentlemen having laboured solely for the interests of the company, and being actuated by the ambition to restore to the shareholders, free of debt, a valuable property which for years has been the plaything of American adventurers, and their English stock jobbing allies. Messrs. Pearson and Harvey are assured on the honour of Messrs. Vincent, Garne, and Co., that on tendering their resignation certain gentlemen (whom they refused to name) of considerable monetary influence were ready to come on the board, and substantially assist the company with the means of war so much required—money; our bucolic colleague promising personally that the day following their retirement should herald the departure of the "minion of the law" in possession. Incredulous, yet hopeful, shrinking from the responsibility thus laid upon their shoulders, they retired from the direction, wishing God speed. Alas, however, for faithless vows and solemn promises, too indicative of a desire at all hazards to get rid of the only men who could save the company, the financial magnates come and go, and although 14 days have elapsed the "minion" still occupies his seat on the stool, blankly gazing on all who enter, seeming to enquire how long is this state of affairs to remain.

HULTAFALL LEAD AND BLENDE MINES.

SIR,—In response to my promise of last week, in a letter which you did me the favour of publishing, I beg to call the attention of the investing public to the above mines, which I believe will in the future rank among the highest of the class in existence. The situation of a property, irrespective of its discovered value, has sometimes a great deal to do in determining its real worth. If we apply this rule to the Hultafall Mines, I venture to think that nothing could be more satisfactory, for, while the geological formation of the country is indicative of mineral wealth, the close proximity of the Vieille-Montagne Company gives force to the already discovered riches of the Hultafall. It is not my intention to draw a very close comparison between these two undertakings, but it may help some who have not posted themselves up in these matters to a conclusion by giving a few particulars under this head.

The Vieille Montagne Company has had an existence of many years, and although it has a capital of something like 1,000,000 sterling, it has been able to make enormous returns to its shareholders, in addition to reducing its capital by many millions of francs up to January, 1876, to which result their Swedish mines have greatly contributed. At the period named these mines had been sunk to a depth of 100 metres, or (say) about 50 fms, and their returns of blende is said to have been about 50,000 tons, and that of lead 6000 tons per annum. Doubtless these are the most successful lead and blende mines in the world. When it is considered that the Hultafall Company's mines not only adjoin those of the Vieille Montagne, but is in almost every respect, where it has been possible to test the question, a counterpart of those famous mines, it is difficult to set too high a value upon them, and particularly so when the smallness of the capital in comparison with its great neighbour is taken into account. Your readers will in all probability remember that the capital of the Hultafall Company is 60,000£, in 12,000 shares of 5£ each. It commenced its career at a time when it was almost impossible to launch a company except by those whose reputation had endured the shock of years of distrust, and who were known to hold a position inferior to none in this special branch of mining enterprise. But although its birth was at a somewhat inauspicious time, it soon acquired a renown among the shareholders, which would have helped it to a very high market value had investors lost their timidity by informing themselves of its intrinsic rather than its speculative worth.

At the mines the work is making very rapid advancement. The shaft has been sunk upwards of 100 ft., or to about one-third the depth of the Vieille Montagne, and the ore increases in value as the shaft descends. The last specimens taken from the bottom gives a very much higher percentage of lead and less blende, and can be treated with considerably more ease and less exp-ense. The agent states that in three months' sinking he had raised from the shaft and cross-cut in the lode nearly 4000£ worth of ore—more than double the cost of sinking and the erection of buildings at the mines. The engine, boilers, and crushing and dressing plant sent out are now delivered and in course of erection, and it is expected will be at work in about a month. The machinery is capable of treating ores calculated to return 150 tons of dressed lead and 350 tons of blende monthly, which at present prices would realise 2650£, at a cost not exceeding 1150£, leaving 2500£ per month, or 30,000£ a-year net profit. This result will give the shareholders 2£ 10s. per annum in dividends, which should make the shares cheap at 20£ each, but the calculations that are here made take but small account of what the mine is capable of doing with vigorous management. Captain A. Waters, in his report on this property, says—"You could easily get 200 tons of the mixed ores per diem. In due course a mine equal to the celebrated Vieille Montagne may be expected at Hultafall."

It will be seen, therefore, from the authority quoted that anything but an exaggerated estimate has been made of the capacity of this great property. With a lode 3 fathoms in width, and of very large extent, yielding 40 per cent. of metal, and increasing in richness as depth is attained, it is difficult to imagine anything where the opportunity of investing safely, and with the certainty of considerable profit, is more distinct. When the Van Mine was introduced a period of stagnation, similar to the present, but not so intense, had preceded, and that property gave tone to the mining business for years after, and it does not seem too much to expect results of a like kind, but by no means inferior, from the Hultafall.

Cornhill, E.C., Jan. 16.

M. F. DORNER.

HOME INDUSTRY—NATIONAL WEALTH.

SIR,—It is well known that food, clothing, and shelter are the necessities of human life. The former requires the agriculturist, while in the latter, for the manufacture of cotton, wool, silk, linens, and other fabrics, both labour and machinery are more particularly essential, the difference being only one of degree. The house, however, cannot be constructed without its iron, while the artisan requires his saw, plane, trowel, &c. All these industries, therefore, require the miner and the smelter, as well as the finished implement maker. Luxuries, too, have largely entered into the commerce of nations, arising from the increase of wealth. The precious metals, rubies, diamonds, and pearls, being articles of commerce, the production of which is more or less a source of gain to the respective countries where they are produced. Production is of little value without consumption. Hence the necessity of demand for supply, the equilibrium of which in the course of years cannot be avoided. Forced markets lead invariably to panic and reaction. In earlier times barter became the means of payment for commodities held by one person and required by another. The introduction of the precious metals as a standard value, or paper currency as a promise to pay, has rendered this practice in most civilised countries obsolete, and the great increase of trade between respective countries is to-day to be calculated by the pound sterling, the ruble, the dollar, &c. The exchange of cash payment for goods of whatever kind, and the increase of such exchange on one hand or the other, is matter which demands serious consideration; for instance, if England is paying the foreigner for his goods in coin of the realm to an

extent of 10 per cent. increase yearly, while on the other her respective exports decrease by a like amount, we think the result must ultimately be ruinous, and we believe these figures are not wide of the true state of trade at present.

Home industries and production is, therefore, a matter which deserves serious attention. This country has from time immemorial to a certain extent been a producer for the necessities of the wants of the world. The discovery of the value of tin, and the knowledge of its existence in the Western Counties of this country, brought merchants annually, who purchased from the rude tinner the production of his year's toil, paying him in such ways as he might agree, probably partly at least by gold. The traces of these old workings by tinners are now to be seen covering tens of thousands of acres, stretching from a few miles below Exeter to the Land's End of Cornwall.

This industry has been continuously carried on with fluctuating results until the present time. The stores are not exhausted, and a period of greater prosperity may still be hoped for. It is, however, impossible to estimate the immense amount of gain to the nation which has arisen from this industry.

Another productive branch was that introduced by Agricola. The Romans having made a conquest of the country introduced roadmaking, farming, &c., and their conquest became far more beneficial to the invaded than the invader; like many other aggressive countries its cost of winning was not repaid them during the two or three centuries they held it. Agriculture, however, has made slow but steady progress since (during the last 30 years we may say rapid progress); much more, however, might be done, and there are now from one end of this land to the other lands, either altogether uncultivated, or are in a state of semi-cultivation. Companies or private enterprise might be here well rewarded; and seeing that the import of food of various kinds reaches the enormous sum of nearly 100,000,000£ sterling yearly, that money can with difficulty be safely employed, and that the labourer has now great difficulty in earning a fair day's wage. We say that not only might capitalists obtain safe and profitable investment, but would also become benefactors to their country by the employment of labour and the production of food, thereby adding to the national wealth.

Finsbury Chambers, Jan. 16.

T. VOSPER.

THE BLENDE TRADE.

SIR,—I am obliged to your correspondent, Mr. George G. Blackwell, for so kindly answering my question regarding blende; but how, may I enquire, is open competition to be best encouraged? No one would, I suppose, consent to purchase from advertised values. Nor can each smelter be supplied with parcels. Is there any open market at Truro or elsewhere for the transaction of business connected with lead and blende sales, where open competition may be met with? If not, would Mr. George Blackwell, or any correspondent, kindly suggest some simple means of promoting a more open trade in ore sales?

A. B. C.

THE BLENDE TRADE.

SIR,—Replying to the letter "A. B. C." which appeared in the Journal of Jan. 5, I may say that if he has any blende assaying 56 per cent. for sale I can certainly offer him an advance upon 3£ 16s. per ton; and if your correspondent has no objection to communicate with me I shall be glad to as far as possible meet his views. With regard to 3£ 16s. being a fair or good price, personally I fear it is not, at least if the percentage is as stated.

X. Y. Z.

LLANRWST LEAD MINE.

SIR,—Mr. Granville Sharp commenced his letter in last week's Journal by stating "it will be admitted by everyone that facts speak for themselves." If that gentleman supposed he was dealing with facts, so far as the mine and I am concerned, I shall hope by this letter to undeceive him. That facts speak for themselves may be true as far as they are known, represented, and understood, but it should not be forgotten that there are relative as well as positive facts, and if these are ruthlessly separated from each other they may be easily made to imply facts which do not exist. It is a positive fact that we have as yet sold but about 100 tons of lead ore, but the relative facts in connection therewith I shall here endeavour to set forth and explain. Without quoting in full the second paragraph of Mr. Sharp's letter—"If, as asserted, there are hundreds of tons of stuff, still undressed and in course of dressing, at the surface," I re-assert that fact; there was, and still is. I shall now proceed to furnish the explanation asked for, after which I shall endeavour to resolve the comparison drawn by Mr. Sharp between this mine and West Chiverton into contrast. My answer to the question, "How is it that we have as yet sold but two lots of 50 tons each?" is that since dressing operations were commenced we have lost five full weeks from accidents to the crusher—the stuff treated having been very hard—and the breakage of a balance-bob of the engine. Another reason is, that scores of tons of ore partly dressed are still on the floors, for which special provisional arrangements have to be made, one of which is now complete, whilst the other principal one is in active progress.

With respect to the time spoken of by Mr. Sharp in his letter which has elapsed since I met him on the occasion he has referred to, I had then just previously returned from Cornwall where I had been purchasing an engine. It was necessary before taking out the engine to send an engineer there to measure the building and machinery for the purpose of making plans and drawings necessary to their re-erection. The excavation for the engine at the mine was a lengthy and costly piece of work arising from the hilly nature of the ground and its hardness, much of which had to be removed by blasting, and at a cost of upwards of 70£. There was also a difficulty at first in getting men to undertake the work. The weather was fine during the time this work was in progress—May, June, and July—and for some time after the building had commenced, but the latter part of the summer 1876 was very wet, so much so that some weeks the masons were unable to work more than a day or two. So that before the buildings were completed the winter had set in, and the engine could not be got ready to work until February, 1877. We had then no water on the mine besides what was pumped from the shaft, which was then very little, as the shaft was in close country rock, and only 5 fms. deep under the adit. We had, therefore, to sink the shaft with all speed in order to find sufficient water for dressing purposes, which we eventually did. Meanwhile we proceeded with the machine jiggers and other dressing appliances, besides erecting extensive sheds to shelter the works, after which the construction of the dressing machinery was proceeded with, the whole of which, with the exception of the eccentrics, chains, and pulley-drums, was made on the mine, and, being extensive, was a work of much labour and time. At West Chiverton they had not, I presume, such preliminary work as this to attend to, but merely to lay out and furnish the dressing-floors. Mr. Sharp aims a reflection on me for complaining of his having adverted to me in an unjustifiable manner, instead of requesting him to surrender his authority. It appeared to me there was no necessity for such a course, seeing he had already stated his authority. He said it was his father, from information received from some nondescript dresser of an adjoining mine. But since then it has been stated that the information relied on emanated from the agent of an adjoining mine. I shall do more than ask for the disclosure of his name—denounce him as a malicious fabricator of falsehood, and defy him to prove himself to the contrary.

We may not have had more than 10 tons of ore clean at the time referred to, as the crusher had been idle for weeks, but as to our having dressed up all the ores to produce that result I repeat—after sampling another 50 tons as we propose to do next week—that hundreds of tons of stuff will remain undressed, and in course of dressing at the surface. It may be replied that we are making this return from ores we are now sending up from below, although that would be a sorry subterfuge for one who had stated the mine was poor, which statement also was untrue. During the past month of five weeks only 18 fms. of ground was stoped throughout the entire mine, and only one level—the adit—driven on the lode's course, and that by two men, at the rate at 2 ft. per week. And, as stated in my

last letter, much of the ores broken by stoping are still down in the mine. Our next sale will make 150 tons of ore sold, besides all that will remain upon and broken down in the mine, the product principally of drivages at the adit, a winze or two, and a little from the 10 above adit. I again state that the lode nowhere throughout the mine was as good as in the bottom of the adit, and that represented by these returns, and what remains broken and in course of dressing to be returned, is all intact. It would be a curious phase of mining if a poor lode could provide such a result.

Llanrwst Mine, Jan. 16.

ROBERT KNAPP.

THE LLANRWST LEAD MINE.

SIR,—It is not my intention to champion this matter on one side or the other, further than to say that it must appear to the most superficial what is the main object of the Messrs. Sharp in criticising the assumed value of this mine. It is tolerably patent that these gentlemen think that the principals of the London management here are making as much of it as the machinery at their disposal enabled them to do as is the rule, and not the exception, in reference to similar businesses to the no great credit of the operators. But the difficulty is to see the exceptional guilt of those Llanrwst people at worst, for let it be borne in mind that it will become "the crock to call the kettle smutty." What I think we have a right to complain of (as mine agents) in the Messrs. Sharp in the putting down of Capt. Knapp's evident ability, capability, and experience as that of being a mere "underground agent" to his disparagement, and the consequent disparagement of men of similar experience. It is only doing justice to Capt. Knapp to say that among men of ability he stands in the first rank of his professional brethren, and pretty forward in that rank too, and that he has been the author of some of the ablest matter upon the subjects under review that has appeared from the pen of his class in your widely-spread Journal for the last 20 years cannot be questioned: 30 years ago Capt. Knapp established his claim to the reputation of an able miner and shifting able tributer, and added to which we know that his subsequent studies and engagements have especially qualified him not only to the status of that of manager (in its general acceptance), but also to that of consulting engineer and mineral surveyor as well, and it has been thought a pity that he should be so circumscribed and confined to one mine or one locality merely with the ripe experience of which he must be possessed and accredited with to-day. It is creditable to Capt. Knapp (as well as many of his brethren) that he is self-taught, and in place of the self-conceit and self sufficiency so often found abounding in certain lower grades of his class, he must have early discovered his wants and requirements, and laboured hardly to have secured such well marked distinctive pre-eminence. And, therefore, it does the Messrs. Sharp's cause no credit to treat an expert like him as if now really acquiring a knowledge of the mere rudiments of mining, mine management, &c.

Liverpool, Jan. 16.

MARTIN BOUNDY.

THE YORKSHIRE MINE, PATELEY BRIDGE.

SIR,—In the Journal of Dec. 28 a communication appeared on the Yorkshire Mine, Pateley Bridge, signed "An Occasional Visitor," reflecting on the management, and strongly advising the shareholders to engage "some man of spirit and experience who will look after it, and see it properly developed." As I am "the working foreman" to whom allusion is made, I respectfully solicit a small space in your columns for a few remarks on the matter. Having been a workman in the mine and its neighbourhood for 30 years, my proficiency in "experience" is acknowledged by my employers' trust, irrespective of the consideration of "An Occasional Visitor," and if his idea of "this go-ahead age of progress" is to "develop" the mine by injudiciously squandering the shareholders' money in ostentatious and unprofitable surface surroundings, or by opening out and intersecting ground which no practical miner in the neighbourhood would sanction—as has been done in this district—the sooner such idea is dispelled the better. The quality of the ground which we have intersected, with the cost of breaking, can be soon ascertained, and I assert that in none of the neighbouring mines which have agents "of spirit and enterprise" can be found the amount of labour done at so small a cost. With respect to the "progress made and poor prospect for the future," the ground is unbroken from the surface, and all the veins in West Pateley Bridge and East Craven Moor Mines run parallel to it, and we have strong indications of being near one at present, so that "its salvation" may eventually be "proved" without "An Occasional Visitor's" advice being acted upon.

Greenhow Hill, Jan. 14.

SAMUEL SIMPSON.

ROOKHOPE MINE.

SIR,—The explanations given by Messrs. Watson, in last week's Journal, respecting the non-fulfilment of the promises made at the last meeting of this company, have not come a moment too soon. There are many surmises in the North affecting the directors' management of this mine—in fact, I heard a competent authority state that it was not managed for the benefit of the general shareholders. I regret to say that there are some awkward facts which lend much support to this opinion. At the last meeting it was stated that 50 tons per month would be dressed from that time, which would soon be increased to 80 tons per month, and that the dressing-floors were then capable of dealing with that quantity, and that in the early part of this year a dividend might be expected. On the ground of these statements the shares rose rapidly. Since then, however, there has been a mysterious silence respecting the quantity of ore produced. The shares rapidly decline—not a word in the monthly reports to explain matters and reassure the shareholders. But when Messrs. Watson promise to give your readers some information respecting this mine—through fear, I suppose, of some reflections on the directorate—they are favoured with explanations in regard to the dressing-floors. It is time, I think that the shareholders woke up.

A SHAREHOLDER.

[For remainder of Original Correspondence, see to-day's Journal.]

GUNPOWDER.—In the last twelve months there was an increase in the exportation of gunpowder. The value was 394,353£, against 359,722£ in 1876.

COAL.—The declared value of coal, coke, &c., exported last year was 7,828,497£, against 8,904,463£ in 1876.

SOUTH MOLTON CONSOLS.—The managing agent gives a very favourable account of the lode in the 12 fathom level, where for 5 fathoms long it will yield 2½ tons of good lead per fathom, and in one place there is a beautiful bunch of lead. A winze was commenced by the former workers to the east of this good lode in the 12, and a rise was put up from the 22 to meet the winze; the communication is expected to be made daily, when the manager says they will begin to raise lead rapidly.

HINGSTON DOWN CONSOLS.—A large number of local shareholders holding together over 5000 out of the 18,000 shares, have issued a letter asking for proxies in support of Capt. Richards of Devon Great Consols, "who has been injudiciously dismissed" from the management by a section of the board. Other changes have also been made which they consider are detrimental to the interests of the company. The expenses connected with the London office are said to exceed the whole cost of management, purserhip, clerkship, and underground agency combined, and these London expenses it is proposed to reduce. Capt. Richards, who is one of the largest shareholders in the mine, has voluntarily offered to continue the present management without remuneration, but the offer has been courteously refused. [We understand that since the issue of the letter by the local shareholders in reference to the startling change of management and interference in the practical working of the mine on the part of a portion of the directors, numerous replies from large and influential shareholders are being constantly received fully endorsing the sentiments comprised in the letter, and expressing deep sympathy with Capt. Richards in his present illness.]

EPPE'S COCOA—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Eppe has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—Civil Service Gazette. Sold only in packets labelled "JAMES EPPE and Co., Homoeopathic Chemists, London."

AWARDED THE PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

HADFIELD'S STEEL FOUNDRY COMPANY,

ATTERCLIFFE, SHEFFIELD,

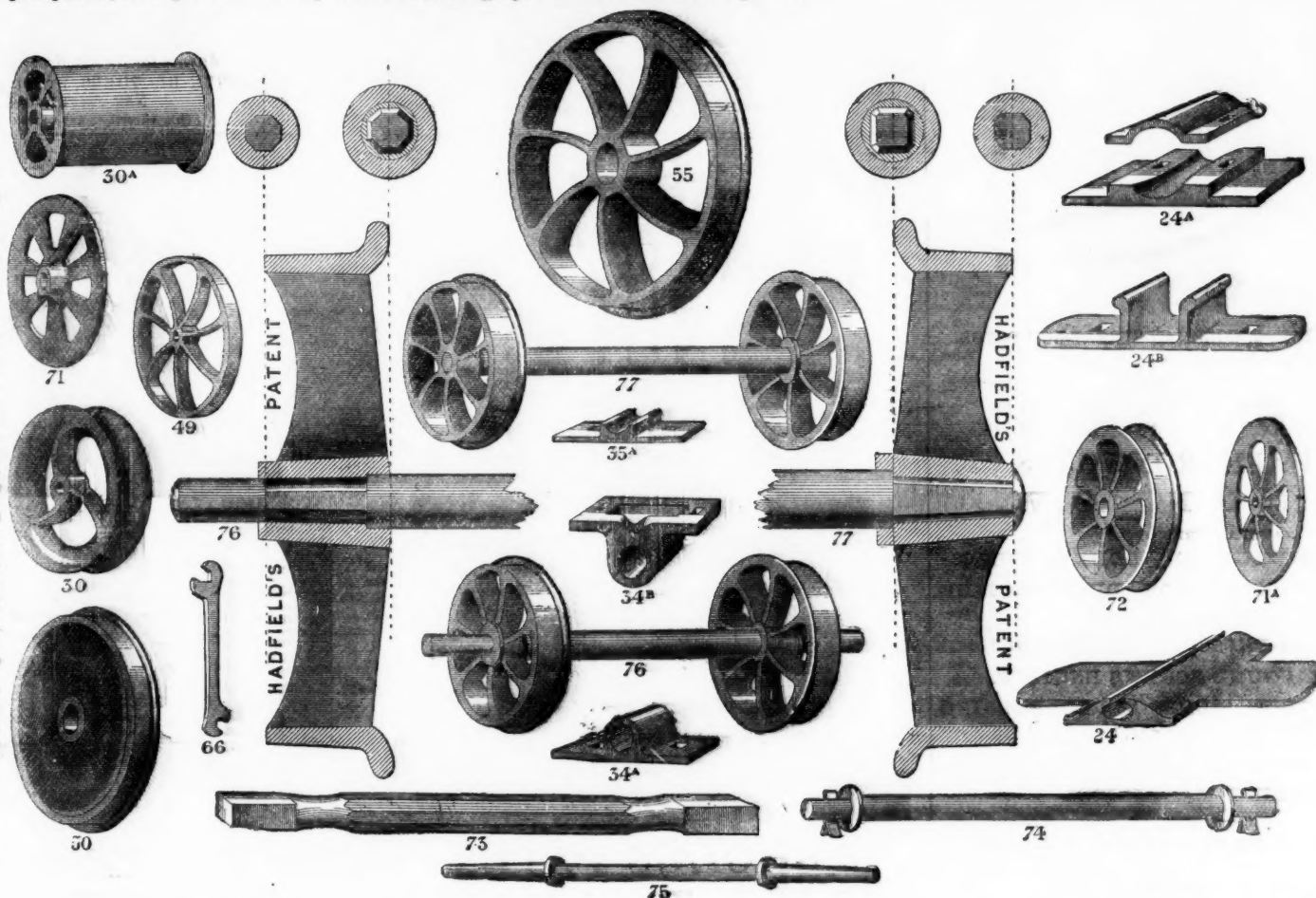
DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS, for Engineering and Machine Purposes,

AND ARE THE SOLE MAKERS OF
HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c., &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.

N.B.—Prices per Set of Wheels and Axles, fitted complete, forwarded on receipt of diameter of wheel on tread, depth of tread, real gauge, and thickness of axles and rolling load.



[This Sheet of Drawings is Copyright]

HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

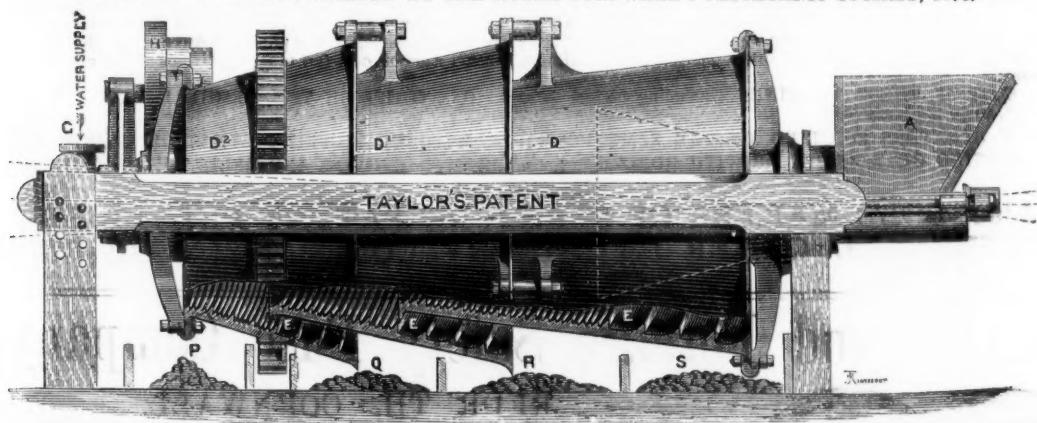
The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very heavily fitted on, and run exceedingly true.

We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

FIRST SILVER MEDAL AWARDED BY THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1876.



TAYLOR'S PATENT DRUM DRESSER,

FOR SEPARATING AND SIZING MINERAL AND OTHER SUBSTANCES.

By the aid of this invention any materials, which are of different specific gravity, can be concentrated and sorted mechanically, while in the case of ores the fine mineral is brought up with the larger particles instead of being washed into the waste—a most important feature.

This machine uses very little water in proportion to the quantity of material treated, and will be found a most useful and efficient dressing apparatus.

For further particulars, and to see machines at work, apply to the Patentee,

H. E. TAYLOR, 15. Newgate Street, Chester.

MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER

(ESTABLISHED 1790).

JOHN STANIAR AND CO.,

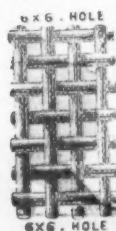
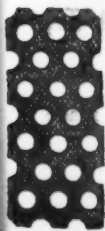
Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for

LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES.

Shipping Orders Executed with the Greatest Dispatch.



IMPROVED IRON

SMITH'S

NO BRICKWORK

PRICES FROM

£6.15. NETT.

FREE ON G.N.R.

GILDERSOME.

HEARTH,

REQUIRED.

CAN BE TAKEN DOWN

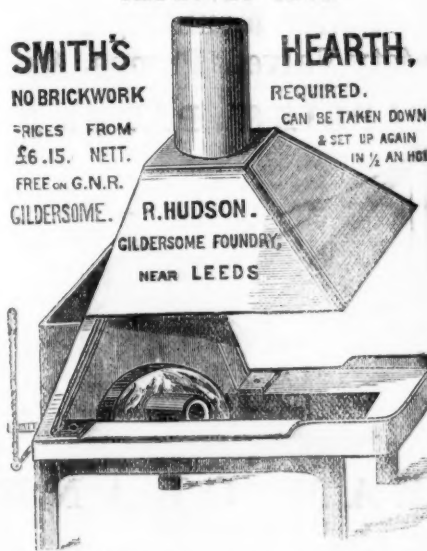
& SET UP AGAIN

IN 1/2 AN HOUR.

R. HUDSON.

GILDERSOME FOUNDRY,

NEAR LEEDS



GREAT SAVING IN ROOM.

BENNETTS' SAFETY FUSE WORKS

ROSKEAR, CAMBORNE, CORNWALL.

BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES.

Suitable for wet or dry ground, and effective in Tropical or Polar Climates.

W. BENNETTS, having had many years experience as chief engineer with Messrs. Blackford, Smith, and Co., is now enabled to offer Fuse of every variety of his own manufacture, of best quality, and at moderate prices.

Price Lists and Sample Cards may be had on application at the above address LONDON OFFICE.—H. HUGHES, Esq., 65, GRACECHURCH STREET.

PROVIDE AGAINST ACCIDENTS.

By taking a Policy of the

RAILWAY PASSENGERS' ASSURANCE COMPANY.

THE OLDEST AND LARGEST ACCIDENTAL ASSURANCE COMPANY.

Hon. A. KINNAIRD, M.P., Chairman.

Subscribed capital, £1,000,000. Annual income, £210,000.

A fixed sum in case of death by accident, and a weekly allowance in the event of injury, may be secured at moderate premiums.

Bonus allowed to insurers of five years' standing.

ACCIDENTS OCCUR DAILY!

£1,200,000 have been paid as compensation.

Apply to the Clerks at the Railway Stations, the Local Agents, or—

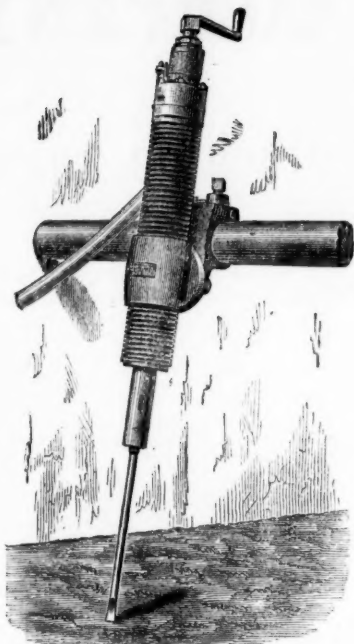
64, CORNHILL, LONDON.

WILLIAM J. VIAN, Secretary.

DARLINGTON" ROCK BORER.

NO VALVE.

SCREW, OR CRADLE MOUNTED, BORING MACHINES.



AIR COMPRESSORS. DRIVING AND SINKING APPARATUS.

JOHN DARLINGTON, 2, COLEMAN-STREET-BUILDINGS,
MOORGATE STREET, LONDON, E.C.**ALEXR. WILSON & CO.,
VAUXHALL IRONWORKS.
LONDON, S.W.,**

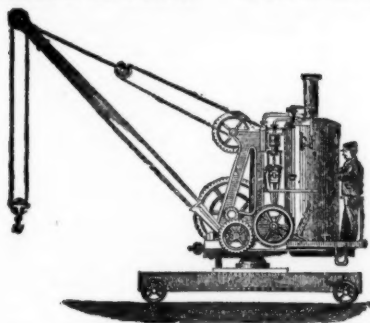
MANUFACTURERS OF
THE VAUXHALL DONKEY PUMPS.
THE EXCELSIOR DIRECT-ACTING
PUMPS.
HIGH-PRESSURE SCREW ENGINES
COMPOUND SCREWS ENGINES.
PATENT SURFACE CONDENSING
ENGINES.
PATENT PADDLE ENGINES.
HOISTING MACHINERY.



ILLUSTRATED AND PRICED CATALOGUES ON APPLICATION.

LAMBERT BROTHERS,
Alpha Tube and Fitting Works,
WALSALL.

Boiler Tubes, Hydraulic Tubes,
Sluice Valves, Hydrants,
Stop and Draw-off Cocks,
Boiler Mountings,
Safety Valves, Pumps, &c.

CHAPLINS' PATENT**STEAM CRANES**

15 Cwts. to 20 Tons,

Geared to hoist or lower, and turn entirely round in either direction
by steam, separately or simultaneously, as required.STEAM AND HAND DERRICK AND OVERHEAD
TRAVELLING CRANES.

CONTRACTORS' LOCOMOTIVES.

STATIONARY ENGINES,

Also GEARING, for Windings, Pumping, Sawing, &c.

PATENTERS AND SOLE MANUFACTURERS:

ALEXANDER CHAPLIN AND CO.,
CRANSTONHILL ENGINE WORKS.
GLASGOW.

LONDON HOUSE:

M'KENDRICK, BALL, AND CO.,
63, QUEEN VICTORIA STREET, LONDON, E.C.

THE NEWCASTLE DAILY CHRONICLE
(ESTABLISHED 1764.)
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER
Offices, Westgate-road, Newcastle-upon-Tyne; 50, Howard street, North
Shields; 195 High-street, Sunderland.

STEVENS' PATENT UNDERGROUND WINDING ENGINE,

DESIGNED FOR USING COMPRESSED AIR OR STEAM,

SIMPLE, COMPACT, PORTABLE.

Silver Medal, Royal Cornwall Polytechnic Society, 1876.

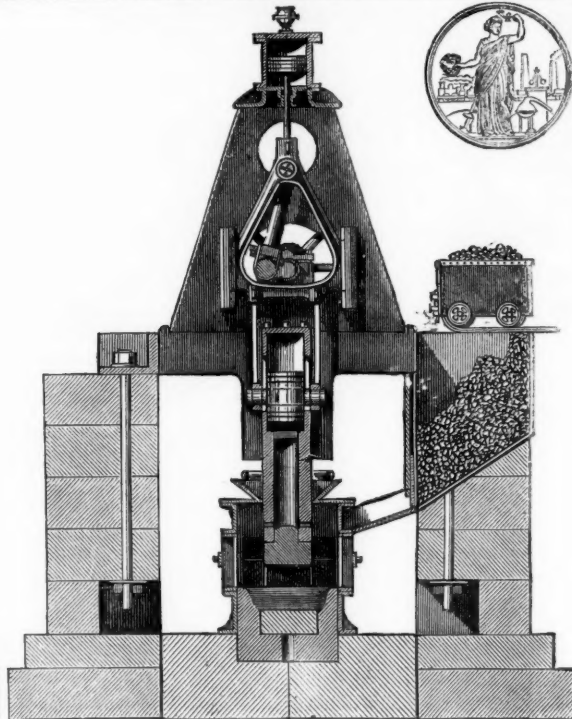
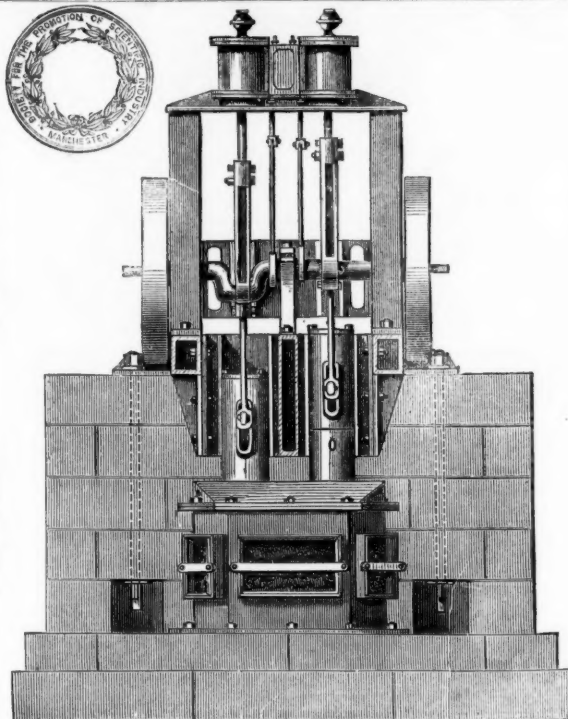
No. 1 size, 7 in. single cylinder, with 2 ft. drums.
No. 2 size, 9 in. single cylinder, with 2 ft. 6 in. drums.
Larger sizes made with two cylinders.
A,— 6 in. double cylinder, with 2 ft. 3 in. drums.
B,— 8 in. " " 3 ft. 0 in. drums.
C,— 10 in. " " 3 ft. 6 in. drums.
D,— 12 in. " " 4 ft. 6 in. drums.

MANUFACTURED BY

THE USKSID CO.,
ENGINEERS, MAKERS OF PUMPING AND WINDING
MACHINERY, AND FORGINGS OF EVERY
DESCRIPTION,
NEWPORT, MON

Agents for the six Northern Counties—
TANGYE BROTHERS, ST. NICHOLAS BUILDINGS,
NEWCASTLE-ON-TYNE.

[This Advertisement appears fortnightly.]

**SHOLL'S PATENT DIRECT-ACTING
PNEUMATIC STAMPERS,**

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL,

N. HOLMAN AND SONS,
ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, SOLE MAKERS OF STEPHENS' PATENT PULVERISER.
MINING AND OTHER MACHINERY CONSTANTLY ON SALE,
NEW AND SECOND-HAND.

British and Foreign Safety Fuse Company,
REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE,
FOR MINING AND QUARRYING PURPOSES.

PRICES ON APPLICATION.



BROADBENT'S

Patent Improved Blake Stone Breakers.

GUARANTEED NO INFRINGEMENT OF ANY PATENT.

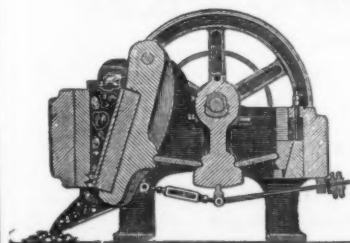
AWARDED PRIZE MEDAL,

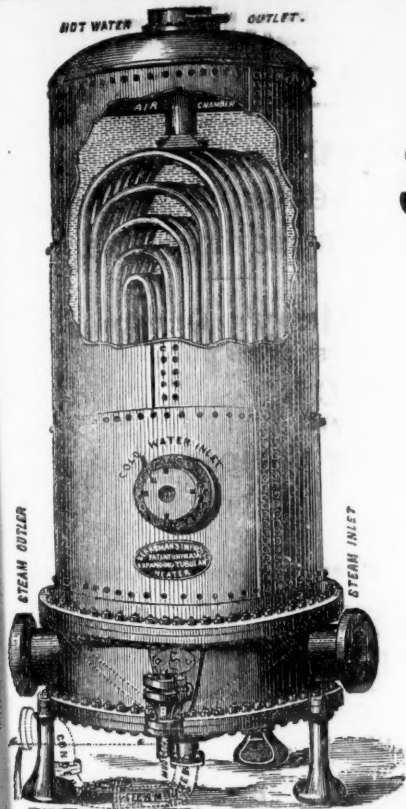
In competition with the best-known Stone Breakers,
September 7th, 1876,

Formerly Manufacturers for the late H. R. Marsden, having made
for him in less than four years 336 Stone Breakers.

ESTABLISHED 1836.

Prices and particulars on application to the Patentees and Sole Makers,—

ROBT. BROADBENT AND SON, STALYBRIDGE.



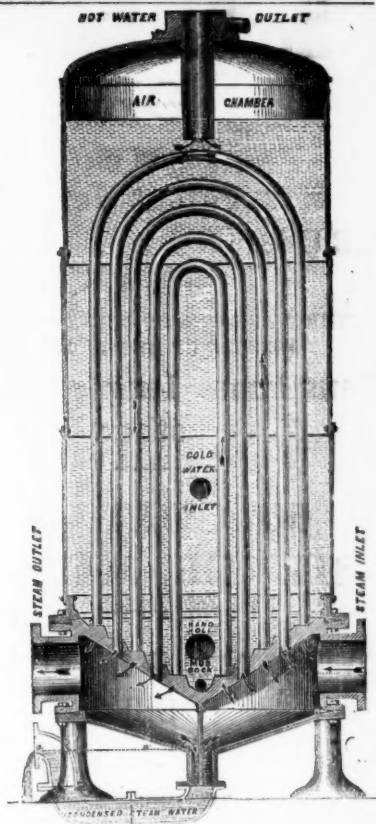
IMPORTANT.

JOSEPH WRIGHT AND CO.

(LIMITED),

NEPTUNE FORGE ENGINE AND BOILER WORKS,

TIPTON, STAFFORDSHIRE,



Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL TO METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREENHOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using two HUNDRED AND THIRTY-THREE of these Heaters

COLEBROOK'S PATENT STEAM PUMPS, FOR HIGH OR LOW LIFTS AND GENERAL PURPOSES.

SOLE MAKERS,—

MAY AND MOUNTAIN,

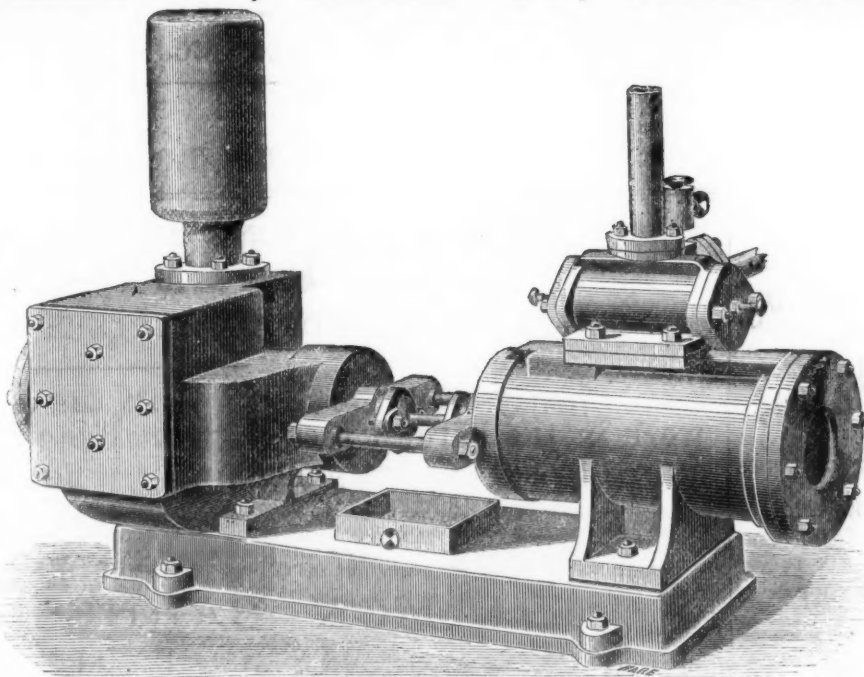
BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam side valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india-rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	7	7	7	7	8
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52	£40
Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12	12	12	...
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	10	12	...
Length of Stroke.....Inches	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	...
Price	£45	£50	£56	£65	£50	£55	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	£115	£135	...

H. R. MARSDEN, PATENTEE AND ONLY MAKER BLAKE MACHINES, OF THE WELL-KNOWN ORE GRUSHERS AND STONE BREAKERS,

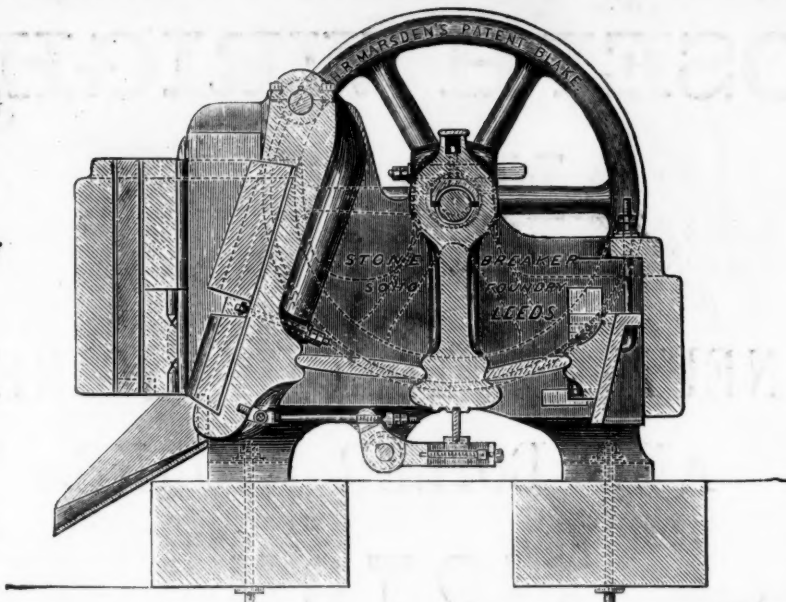
WITH THE
New Patent Reversible
CRUSHING OR CUBING
JAWS,

WHICH ARE CONSTRUCTED OF A PECULIAR
MIXTURE OF METAL, WEARING

Four times longer than any
other.

60 GOLD AND
SILVER MEDALS.

OVER 2000 NOW IN
USE.



For Crushing to any degree
of Fineness, or Breaking
to a required size.

Her Majesty's Government
USE THESE MACHINES

EXCLUSIVELY,
ALSO ALL THE GREAT
Mining Companies of the
World.

H. R. M. has long observed the want of cheaper
machines,

STONE AND ORE CRUSHERS,
And has at length, by means of improved appliances
for the production thereof, been enabled to reduce
the prices, yet keep up at the same time the well-
known strength of construction. Reduced prices
on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

6, Queen-street-place, May 10, 1877.
DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our manage-
ment, and are pleased to be able to state that they have in all cases given the greatest satisfac-
tion. We are, yours faithfully,
H. R. Marsden, Esq. JOHN TAYLOR AND SONS.

DEAR SIR,—I have broken over 40,000 tons of very hard LIMESTONE into ROAD METAL, for
the Newport and other Road Trusts, in your PATENT STONE BREAKER, AND ALL WITH
ONE PAIR OF JAWS, which are STILL IN USE. I do not think at all, but am quite sure yours
are the only Machines which fully perform the work you set them out to do, and there are none
in the Show can at all compare with them.
Yours, truly,
H. R. Marsden, Esq. WILLIAM PRICE, Contractor, Gold Cliff, Monmouth.

Royal Agricultural Show, Liverpool, July, 1877.

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